

Signed 8/24/96

4WD-RCRA

SUBJ: Evaluation of Lockheed Martin's (now known as DMB)
status under the RCRIS Corrective Action Environmental
Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: FLD 083 200 998

FROM: Wesley S. Hardegree
GA/FL Unit

THRU: Kent Williams
Acting Section Chief
RCRA Permitting Section

TO: G. Alan Farmer
Chief, RCRA Branch

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Lockheed Martin Data System's status in relation to the following RCRIS corrective action codes:

- 1) Human Exposures Controlled Determination (CA725),
- 2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the RCRA Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

- 1) YE Yes, applicable as of this date.
- 2) NA Previous determination no longer applicable as of this data.

3) NC No control measures necessary.

Region 4 has also added a regional status code to CA725 which tracks evaluations which are performed and a determination is made that current human exposures are not controlled. This regional status code is listed as "NO, Human exposures present but not controlled." Note that the first three status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA or NC status code can be entered for CA725. The regional status code, NO, is applicable if plausible current human exposures are not controlled in all areas of the facility.

This particular CA725 evaluation is the first evaluation performed by EPA for Lockheed Martin. Because assumptions have to be made as to whether or not current human exposures are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any off-site contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, then a final recommendation is offered as to the proper CA725 status code for Lockheed Martin.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents: August 9, 1995, Final RFA Report; Lockheed Martin's March 28, 1995, Response to the Draft RFA Report; the February 29, 1996, Draft Confirmatory Sampling Report, February 29, 1996, Draft RCRA Facility Investigation (RFI) Work Plan.

III. SITE HISTORY AND MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF CURRENT HUMAN EXPOSURES

SITE HISTORY

The Lockheed Martin located in Sarasota, Florida occupies approximately eight-eight (88) acres. The facility is bordered on the north by Fruitville Road and undeveloped land. Light commercial borders the east and south sides of the facility, and a residential community and pasture land is found to the west of Lockheed Martin. Manufacturing operations at the Sarasota plant began in 1957. The facility is involved in the manufacture of electronic components (e.g., data acquisitions equipment, telemetry equipment/systems, data recorders and voice digital flight recorders for civilian and military use). Over the years, the primary wastes handled by this facility have consisted of

electroplating wastewaters and sludges, paint wastes and cleaning solvent wastes.

GROUNDWATER

Releases from the Main Plant Building (AOC N), the RCRA Regulated Unit and possibly several other onsite SWMUs have contaminated groundwater at concentrations above relevant action levels. For example, much of the current groundwater contamination at Lockheed Martin is associated with a past volatile organic source located underneath the Main Plant Building. The specific source of this contamination is unknown at this time, but an old clarifier and past "out-the-back-door" disposal of solvents are suspected.

The main groundwater constituents of concern are tetrachloroethene (PCE) and its degradation products, trichloroethylene (TCE) and 1,2 dichloroethene (1,2-DCE). The highest concentration of PCE found in the groundwater plume is greater than 100 ppb. The highest concentrations of TCE and 1,2-DCE are greater than 100 ppb and 1,000 ppb, respectively. The maximum contaminant limits (MCLs) for 1,2-DCE, TCE and PCE are 7 ppb, 5 ppb and 5 ppb, respectively.

The contaminant with the largest areal extent is TCE followed by 1,2-DCE and then PCE. The distribution of the TCE plume is shown in attached Figure 3. The distribution of 1,2-DCE and PCE is irregular in shape as shown in attached Figures 4 and 5. As can be seen in the attached figures, groundwater contamination at the facility is currently found within the property boundaries of Lockheed Martin.

In the past, onsite boundary wells screened in the Surficial Aquifer and located on the western edge of the facility have detected concentrations of 1,2-DCE and TCE above 1,000 and 100 ppb, respectively; however, offsite monitoring wells have not detected any contamination. In addition, near-by offsite wells were also sampled in 1984 and 1988 for volatiles. No contaminants were detected. It may be that the large North-South drainage ditch, which borders the facility to the west, is serving as a discharge point for some of the groundwater flowing in the Surficial Aquifer. The onsite drainage ditches are also suspected of serving as discharge points for groundwater. More recent groundwater sampling (i.e., 1995 - 1996) at the western edge of the facility shows a dramatic drop in the concentrations measured by previous sampling events (pre-1994 events). This drop may be partly attributable to the groundwater recovery system installed in 1994 for the RCRA Regulated Unit.

Vertically, most of the contaminant mass in the groundwater appears to be located in the Surficial Aquifer (i.e., the upper 25 feet below ground surface); however, constituents of concern

are beginning to be detected in several of the wells screened in deeper aquifers (i.e., the Intermediate Aquifer). The vertical extent of this contamination will be more fully addressed under the RFI.

To summarize, the detected organic groundwater contamination is not known to be migrating offsite. Because Lockheed Martin does not supply potable water from any wells screened within contaminated aquifers located at its site, it is EPA's opinion that no onsite human receptors are present. **Therefore, current human exposures to the onsite groundwater contamination are controlled.**

SURFACE WATER

Past surface water sampling of several drainage ditches at Lockheed Martin in 1984 and 1986 indicated some volatile organics above relevant action levels. Some of the main constituents detected in surface water during these sampling events were:

1. benzene at 60 ppb (Human Health Criteria for Water and Organism Consumption: 1.2 ppb; MCL: 5 ppb),
2. 1,2-dichloroethene at 1,056 ppb (MCL: 70 ppb),
3. trichloroethene at 1,041 ppb (Human Health Criteria for Water and Organism Consumption: 2.7 ppb; MCL: 5 ppb) and
4. metals (main constituent: chromium at 7.785 ppm (MCL: 0.1 ppm)).

Confirmatory Sampling in 1996 of one onsite drainage ditch did not detect any volatile organics. Even if concentrations in the onsite surface water are at the elevated levels listed above, due to the geographically small area of surface water contamination and the fact that the surface water is found in drainage ditches, EPA believes that human exposure to any onsite contamination is unlikely and, if occurring, infrequent and insignificant. For example, the activities performed at Lockheed Martin do not require the employees to routinely contact stormwater ditches. Furthermore, the facility is fenced and access controlled such that only trained employees may come in contact with the ditch and its potential contamination. For example, the only reasonable employee contact with the ditch would be as a result of maintenance activities, which by nature are short in duration and infrequent.

The onsite drainage ditches at Lockheed Martin eventually intersect the North-South ditch. The North-South ditch is an offsite regional drainage channel designed to transfer

stormwater. Confirmatory Sampling performed in early 1996 detected levels of 1,2-dichloroethene in the offsite north-south ditch. The concentrations ranged from non-detect to 13 ppb (average of the samples with detections - 6.8 ppb). The current working conceptual model is that the onsite ditches and possibly the North-South ditch are serving as discharge points for the some of the contaminated water in the Surficial Aquifer.

There are no measures in-place to prevent human exposure to surface water in the offsite North-South ditch. In the past, elevated levels of contaminants have been detected in surface water from the North-South ditch. However, based on the recent Confirmatory Sampling results (1996), the levels of constituents of concern are below respective MCLs and do not appear to warrant significant concern from a human exposure standpoint at this time. Even if the contaminant concentrations are slightly elevated above the latest 1996 surface water sampling results, exposures to the offsite stormwater drainage ditch and its contents are assumed to be intermittent and not likely to be of the nature which would warrant concern (e.g., maintenance workers cleaning the ditch to maintain flow).

Based on the above discussion, current contamination does not seem to be above human health concerns; **therefore, there are no human exposures which need to be controlled.** If the more extensive sampling during the RFI discovers more or higher concentrations of contaminants, then this evaluation will have to be reassessed.

SOIL/SEDIMENT

Some areas of the facility have soil contaminated with constituent concentrations above relevant action levels. For example, many of the SWMUs have been sampled for hazardous constituents in soil. Confirmatory Sampling has identified several units which appear to require further assessment. Metals, particularly arsenic, have been detected at many units at levels above the currently established background values. Based on some simple statistics on the background samples, the background level for arsenic at Lockheed Martin is estimated by EPA to be around 0.5 ppm. The arsenic level to be used to determine if a release has occurred is estimated by EPA to be approximately 1.8 ppm. The human health action level for arsenic ingestion at residential sites is 0.4 ppm. The highest arsenic level detected in soil among the sampled SWMUs is 30 ppm. Almost every SWMU or AOC had at least one sample which registered a nondetect for arsenic. Based on those measurements where arsenic was detected, the average arsenic level across all SWMUs sampled is approximately 5 ppm.

It should be noted that the facility is convinced that the arsenic is not from their operations; however, the regulatory agencies (EPA and FDEP) have not made a final decision on this issue. At the August 1996 Industry Meeting held in Clearwater, Florida, Lockheed Martin presented new information on the arsenic source. Lockheed Martin believes that past mosquito treatment of the North-South ditch with a copper-arsenic compound contaminated the sediment. The contaminated sediment was subsequently dredged and placed on Lockheed Martin's western property boundary. These dredge spoils remained piled next to the ditch until around 1990. In 1990, the dredged material was spread across the western portion of the facility; hence spreading the arsenic. This hypothesis will be evaluated by RFI soil sampling.

In addition to the arsenic detections in soil, a limited number of samples from the sediment contained in some of the onsite drainage ditches have detected volatile organics. The constituents detected in the sediments parallel the constituents found in the contaminated groundwater. Although several sediment samples detected low levels of volatile organics, only one sample contained elevated concentrations of organics (e.g., tetrachloroethene, trichloroethene, cis 1,2 dichloroethene and 1,1,1-Trichloroethane at 3,100, 46,000 ppb, 20,000 ppb and 9,600 ppb, respectively). Note that because these sediment samples were collected from onsite drainage ditches which may or may not contain much water, EPA is viewing the sediment samples to be analogous to soil samples.

Sediment in the offsite North-South ditch also indicates that a release of arsenic has occurred. The background sediment arsenic value in the North-South ditch is 1.0 ppm. Arsenic along Lockheed Martin's property ranges from nondetect to 17.7 ppm. As with the contaminated soil, the facility is convinced that the arsenic is not from their operations; however, the regulatory agencies (EPA and FDEP) have not made a final decision on this issue.

Although there is soil contamination at the facility, the site is fenced with access to the facility limited to employees. For this reason, EPA believes that the only plausible human exposures are onsite. For example, onsite workers could be exposed to contaminated surface or subsurface soil from SWMUs while performing outside work duties. However, these plausible human exposures are deemed to be controlled at this time. This opinion is based on logical deduction on exposure scenarios at the facility and a comparison between industrial risk numbers and the highest arsenic concentration. For example, the Region 3 industrial risk number for arsenic at a risk level of 10^{-5} is 38 ppm. The highest arsenic concentration detected to date is a lone detection of 30 ppm. The SWMUs and AOCs which have suspected soil contamination are grassed or paved, and most of the manufacturing activities at the facility are conducted within

buildings. Therefore, the opportunity for employees to be exposed to the contaminated onsite soil and sediment is viewed to be limited (i.e., exposure duration, exposure frequency and contaminant dose are all expected to be low).

As with the surface water in the North-South ditch, EPA does not feel that exposure to contaminated sediments in the North-South ditch warrants concern at this time. However, if information gathered during the RFI indicates more significant contamination, then EPA will have to reevaluate this position.

Based on the above discussion, human exposures to contaminated soil/sediment are controlled.

AIR

Releases to air from soil, groundwater and/or surface water contaminated by SWMUs at the facility is not known to be occurring at concentrations above relevant action levels or not considered to be significant. For example, most of the contaminated soil is either under buildings or in grassy areas, both of which limit the opportunity for transporting contaminants into the air. The concentration of trichloroethene in the lone sediment sample which contained elevated volatile organics is 46,000 ppb. Although this concentration is above 3,000 ppb, the action level for transfer from soil to air for trichloroethene, EPA does not believe that a lone sediment sample which exceeds the action level for transfer from soil to air warrants a human health concern.

Based on the discussion above, there is no human exposure to contamination via an air route which warrants controls at this time.

IV. STATUS CODE RECOMMENDATION FOR CA725:

As explained more fully in Section III, human exposures to groundwater contamination is prevented by the fact that the contaminated groundwater is currently located onsite and no onsite drinking water wells exist or are planned within the contaminated aquifer. Human exposure to the minor onsite surface water and soil/sediment contamination is deemed to be infrequent or unlikely and not a concern for humans under the current land use. Human exposure to the minor offsite sediment and surface water contamination is also expected to be limited due to the use of the North-South ditch as a storm water ditch. Furthermore, EPA does not believe that incidental human contact with the North-South drainage ditch warrants concern at this time. Therefore, it is recommended that CA725 YE be entered into RCRIS.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA725:

- 1) YE Yes, applicable as of this date.
- 2) NA Previous determination no longer applicable as of this date.
- 3) NC No releases to groundwater.

Region 4 has also added an additional status code which tracks those evaluations which are performed and a determination made that there are groundwater releases which are not controlled. This regional status code is listed as "NO, groundwater releases not controlled." Note that the first three status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured is termed the designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area at the facility must meet the definition before these event/status codes can be entered. The regional status code is applicable if contaminated groundwater is not controlled in all areas of the facility.

This evaluation for CA750 is the first formal evaluation performed for Lockheed Martin. Please note that CA750 is based on the adequate control of **all** contaminated groundwater at the facility.

The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents: The August 9, 1995, Final RFA Report; Lockheed Martin's March 28, 1995, Response to the Draft RFA Report; the February 29, 1996, Draft Confirmatory Sampling Report; the February 29, 1996, Draft RFI Work Plan.

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section V and summarized in the groundwater portion of Section III, releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels.

Although the groundwater is contaminated above relevant action levels, control measures have not been implemented to address the entire volatile organic contaminant plume. However, certain control measures are operational within limited areas of

the facility. For example, the RCRA Regulated Unit (i.e., the Sprayfield) has had a groundwater pump and treat system in place and operation since 1994. Evaluation of data from this system indicates that the pump and treat system has been successful in controlling groundwater flow and remediating the groundwater contamination in this area of the facility. Furthermore, in May of 1996, the first phase of an Interim Measures system began operations for the volatile plume under and near the northwest corner of the Main Plant Building (AOC N). This area has historically been the highest zone of volatile organic groundwater contamination at the facility. Based on the results of the ongoing RFI, the first phase of the Interim Measures will either be expanded or another system will be installed and operated to address the groundwater contamination not controlled by the RCRA Regulated Unit system or Phase I of the Interim Measures system.

Because all of the groundwater contamination at the facility is not controlled, it is recommended that CA750 NO be entered into RCRIS.